UNITED STATES M40A1 SERIES CHEMICAL BIOLOGICAL MASK

U. S. ARMY EDGEWOOD CHEMICAL BIOLOGICAL CENTER

The Recognized Leader in Providing CB Solutions

FACEPIECE ASSEMBLY

- The following components are molded/assembled into the silicone rubber face piece:
  - Buckle Tabs
  - Face piece openings for eye lens
  - Nose cup
  - Voicemitters
  - Outlet Valve
  - Filter Canister Connectors

HEAD HARNESS

- Constructed of elastic webbing sewn to a rectangular head pad or skull cap and buckled to face piece. The ends of the head harness straps have metal strap end clips to prevent fraying of the elastic webbing. Ends of the head harness straps pass through buckles at the two forehead, temple and cheek positions.

Elastic webbing connects the two forehead straps and holds them in proper alignment when the mask assembly is worn. Head harness straps attached to buckles at the ends of the tabs permit adjustment to obtain proper fit of the mask assembly.

NOSE CUP ASSEMBLY

- Made of soft rubber; fits over the soldier's nose and mouth. Diverts exhaled air toward the outlet valve to reduce fogging of the eye lens.

NOTE: The M40A1 has an improved green nosecup.

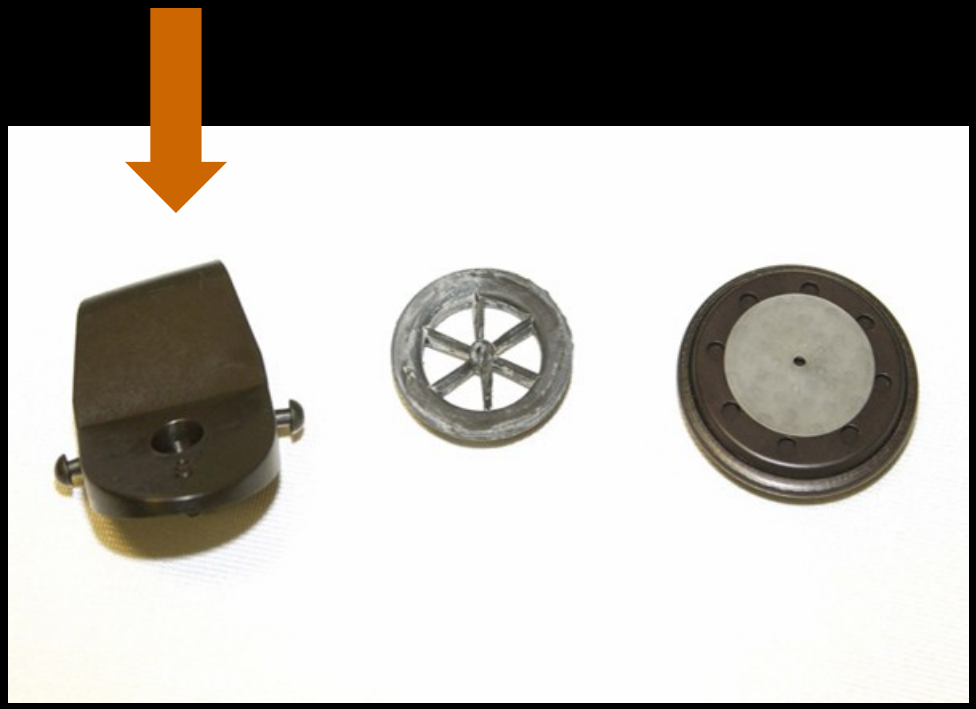
NOSE CUP VALVE SEATS

- Each of the two nose cup valve seats hold a silicone rubber NOSE CUP VALVE DISK, which allows filtered air to enter nose cup and prevent moist exhaled air from fogging the eye lenses in cold weather.

INTERNAL DRINK TUBE

- Allows the soldier to drink while wearing the mask assembly.

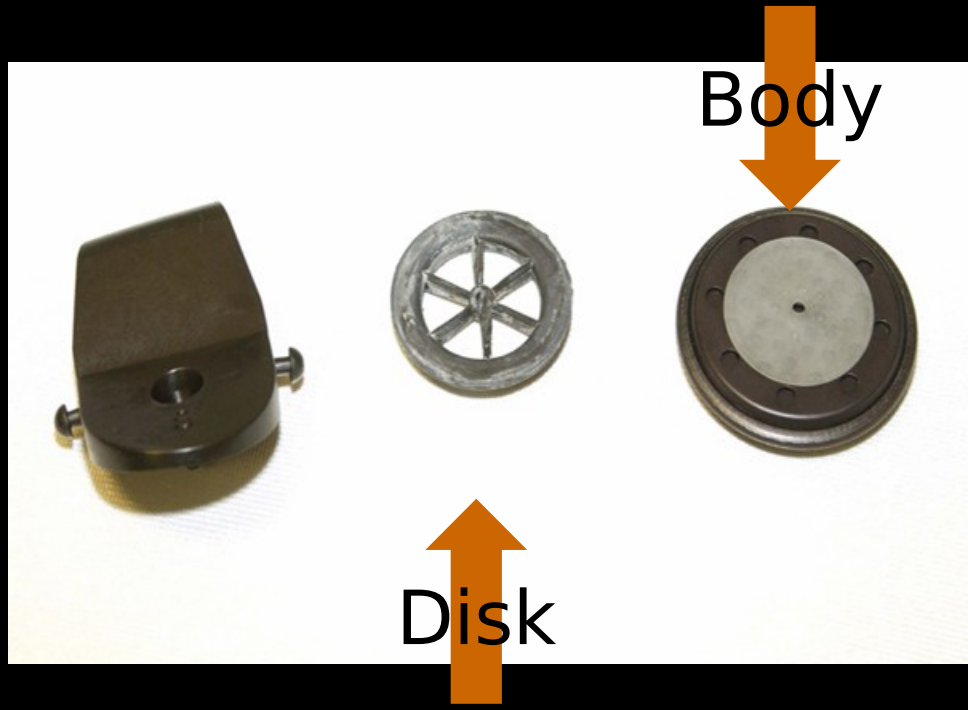
AIRFLOW DEFLECTOR



- Located inside the mask assembly, directs inhaled air over eye lens to prevent fogging. The airflow deflector also supports the inlet valve disk and the inlet valve body.

INLET VALVE BODY and INLET VALVE DISK

- Fits into the airflow deflector, and allows filtered air to enter the mask assembly and prevents moist exhaled air from entering the canister.



OUTLET VALVE COVERS

- Protects outlet valve disk and outlet valve housing from damage.

RETAINER

- The retainer holds external drink tube quick disconnect coupling.

OUTLET VALVE DISK AND OUTLET VALVE HOUSING

- The outlet valve disk and outlet valve housing are located behind outlet valve cover; releases exhaled air and closes on inhalation to prevent contaminated air from entering mask assembly.

FRONT AND SIDE VOICEMITTER

- The front and side voicemitters transmit the person's voice outside the mask.

EXTERNAL DRINK TUBE

- The external drink tube is used to connect the mask assembly to the M I Canteen cap for drinking. It consists of a length of hose and a quick disconnect coupling half that fits into the external drink tube retainer.

FILTER CANISTER

- The filter canister filters out CB agents and other particles from contaminated air.
- Canister can be located either left or right side of the mask depending upon whether the wearer is a left or right-hand shooter.

SECOND SKIN

- The second skin is made of butyl rubber, and covers facepiece to protect from CB agents, toxins, and radioactive fallout particles.

RUBBER CATCHES

- The rubber catches retain the quick doff hood to the second skin and face piece; located at the top and bottom of the second skin. The RIDGE is used as a secondary source of retention for the quick doff hood.

CLEAR OUTSERTS and NEUTRAL GRAY OUTSERTS

- Each outsert is seated in a soft rubber ring that fits over the facepiece eyelens rings. The rim of the rubber ring fits snuggly behind the eyering to protect the eyelens from scratches. Neutral gray outserts are used to reduce sun glare. The outserts also reduce fogging.

M1 WATERPROOF BAG

- The folded waterproof bag and a small envelope containing the RUBBER BANDS are packed in carrier. Instructions for use are printed on the waterproof bag.

MASK CARRIER

- The mask carrier is made of mildew-resistant, water-repellant fabric. It has adjustable straps. It is closed with a flap held by a hook and pile material.

WARNING

A person's safety depends on a proper fitting facepiece. Injury or death can occur if the following warnings are not observed:

WARNING

- The mask will not be fully effective in confined spaces when the oxygen content of the air is low.
- The CB mask has only been tested and verified to protect against all known military agents.
- You must check your facepiece for leaks when fitted and each time facepiece is donned. A leaky facepiece will not protect you from toxic agents.

WARNING

- Stop breathing and close your eyes when putting on your facepiece. Toxic agents may be in the surrounding air. Perform the steps for putting on your facepiece quickly. You must put the face piece on before you take another breath.

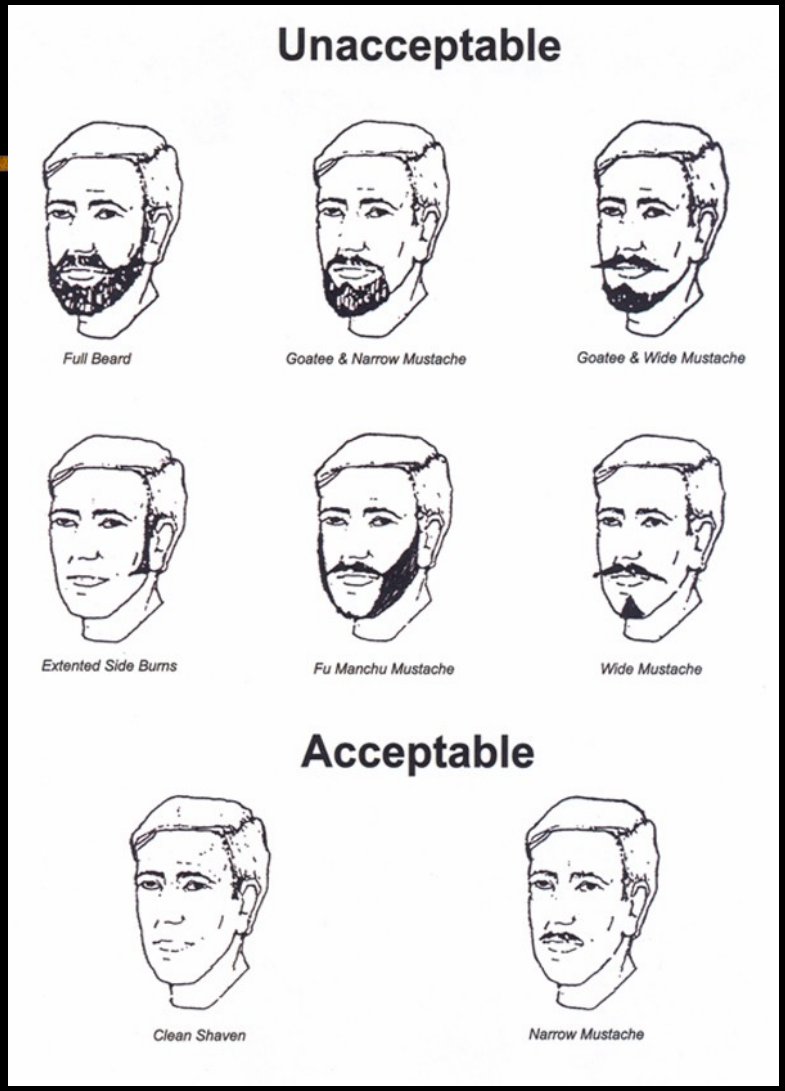
WARNING

- In cold weather, do not clear facepiece by exhaling a large volume of air. Moist air will frost eyelenses and impair vision.

- If you become overheated in extremely cold weather, do not remove your facepiece outdoors until you, your face and head have cooled and any sweat has dried. Frostbite may result if facepiece is removed while your face is still wet.

WARNING

- Keep face clean shaven. An unshaved face could cause a bad seal between face and facepiece.



WARNING

- Soldiers shall remove all hairpins, combs, hair knots, buns, or braids that will interfere with the facepiece seal.

- Check canister-mating surface of the facepiece and areas between these surfaces for dirt or foreign material, which could allow contaminated air into your facepiece.

- Care should be taken not to break the facepiece seal when pressing in the outlet valve disk.

WARNING

- If you feel looseness in the fit of your facepiece during the performance of your mission, immediately exit area and return mask to Mask Issue Facility to be refitted.
- Do not use facepiece if outlet valve cover or outlet valve disk is missing or damaged. The facepiece will leak.
- Do not wear contact lenses with your facepiece; unless it is used for emergency escape.

WARNING

- Any solid matter (even hair) under valve disks will cause fogged eyelenses, discomfort, and leakage.

- Foreign material (dirt or debris) in carrier may cause valves in facepiece to leak.

- Do not store food in waterproof bag because of possible toxic effects.

PREVENTIVE MAINTENANCE CHECKS

NOTE:

All masks must be checked monthly and before each use.

CANISTER

- Check canister especially around seams, for cracks or dents and be sure it is not clogged with dirt.
- Shake canister and listen for signs of loose absorbent particles.

EYELENSES, EYERINGS, and OUTSERTS

- Remove outserts from face piece. Check eye lenses for cracks, cuts, scratches, or discoloration that will affect vision.
- Check eyerings for distortion or corrosion.

- Check both sets of outsert lenses for cracks, chips, or discoloration that will affect your vision. Check rubber rings for tears, looseness, brittle spots, soft or sticky spots or cracked rims.

- Visually inspect inside surfaces of facepiece for dirt, mud, and greasy or oily substances.
- Check facepiece for holes, tears and splits by holding in front of a light source. Look closely at edges of facepiece. Check for soft or sticky spots.
- Check silicone rubber next to eyelenses to ensure eye lenses will not pull away from facepiece. Also check all facepiece housing to be sure silicone is not pulling away.

HEAD HARNESS

- Put on facepiece and check head harness for loss of elasticity.
- Check for dirt. Check straps for cuts, tears, missing parts, or deterioration such as mildewing or fraying.

BUCKLES

- Look at buckles for bends, cracks, or corrosion. Pull on head harness straps and make sure buckles hold straps tight.
- Check for missing or broken buckles.
- Make sure finish on buckles is not chipped or scratched exposing bare metal.

OUTLET VALVE DISK and OUTLET VALVE COVER

- **Do not use facepiece if outlet valve or outlet valve disks are missing or damaged. The facepiece will leak.**
- Grasp tab at bottom of outlet cover and lift bottom portion of outlet valve cover. Check to see if outlet valve disk is present and is not curled or distorted. Rotate outlet valve disk to make sure it is not sticking.

WARNING

- **Do not use paper to remove dirt or moisture from outlet valve cover or outlet valve disk. Paper may break up and lodge in outlet valve.**

- Look at outlet valve disk for nicks, tears or rips. Wipe off any moisture from outlet valve disk with a clean dust free cloth. Smooth outlet valve disk so it lies flat on outlet valve seat.

WARNING

- Check outlet valve seats for dirt.

- Check outlet valve covers for cuts, tears or holes. Look at inside of outlet valve cover for dirt or moisture. Wipe off any dirt or moisture with a soft, clean, dry cloth.

INTERNAL/EXTERNAL DRINK TUBES

- Check that internal drink tube and external drink tube are present. Look for cracks or cuts in internal/external drink tubes.
- Check internal drink tube for proper alignment.

- Check external drink tube for solid connections.

AIRFLOW DEFLECTOR

- Check that airflow deflector is securely mounted inside facepiece and that both flanges on the airflow deflector are in the mounting holes of the facepiece and are not broken.
- Check mounting holes for cuts or tears.

INLET VALVE

- Check that inlet valve disk and valve body are present and properly mounted on post of airflow deflector.
- Blow on inlet valve disk to make sure it is not stuck to valve body.
- Check inlet valve disk for cuts, holes, or tears.
- Check for dirty inlet valve disk.

WARNING

- Do not use facepiece if valve body or inlet valve disk is missing or damaged.

The facepiece will leak.

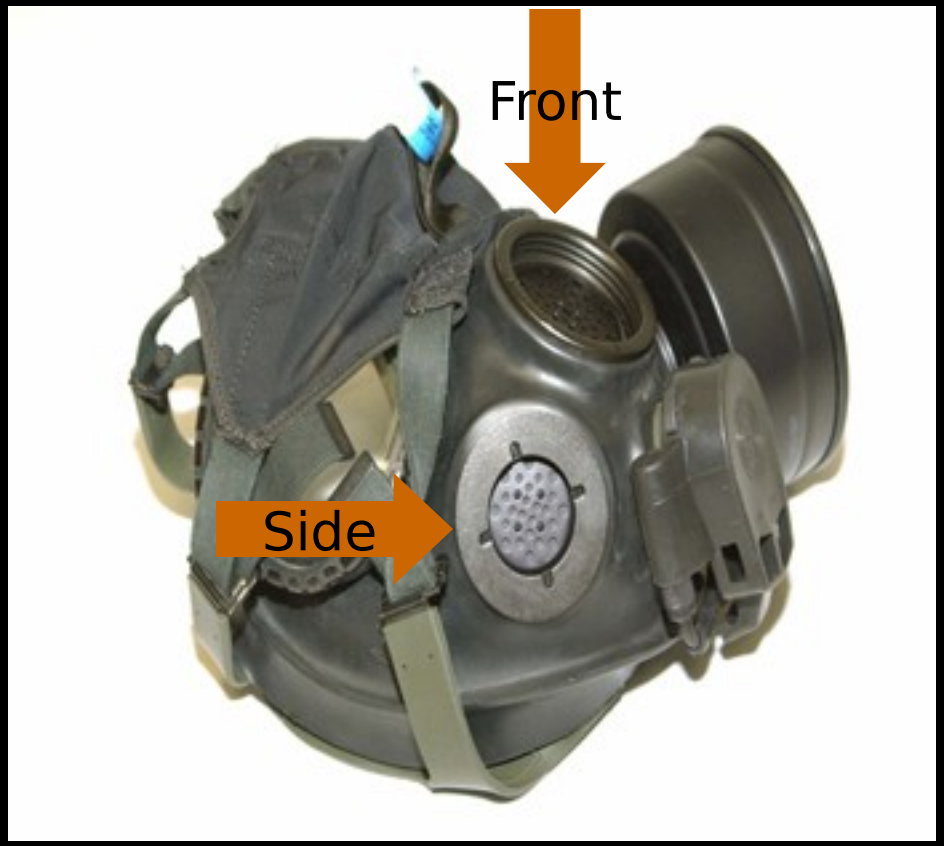
NOSECUP ASSEMBLY

- Check that the nosecup and valve seats are free of dirt. Check for cracks, cuts or holes.
- Check that the nosecup is not pulled away from back of voicemitter housing. Gently try to pull nosecup away from front voicemitter to make sure it is held securely.

NOSECUP VALVE DISK

- Check that nosecup valve disks are present. Rotate nosecup valve disks to be sure they are not stuck; check that valve disks are not curled or torn.
- Check that nosecup valve disks are seated on inside of nosecup.

VOICEMITTERS



- Check retaining rings on front and side voicemitter for corrosion, cracks, or nicks.
- Check front and side voicemitter for dents, cracks or punctures. Make sure the four beads in the center of each voicemitter are facing outward.

CARRIER

- Empty carrier and check for dirt, sharp edges, torn straps or missing hardware. Make sure there are no pencil or pen markings on the carrier.
- Check for mildew, solvents or abrasive materials, which may harm facepiece. Check seams for broken stitches.

- Check hook and pile fasteners for dirt. If dirty, clean with a stiff-bristle brush. Make sure hook and pile fasteners are secure on flap.

M1 WATERPROOF BAG

- Check waterproof bag for cracks, tears, holes and brittleness.
- Check that rubber bands are not sticky, broken or brittle.

OPTICAL INSERTS (if issued)

- Inspect optical inserts for broken lens, frame, or disconnection from facepiece.

NOTE: *If* *nected,*

DONNING YOUR MASK

- Open carrier with your left hand and hold it open.
- With right hand, grasp facepiece and remove from carrier.

WARNING

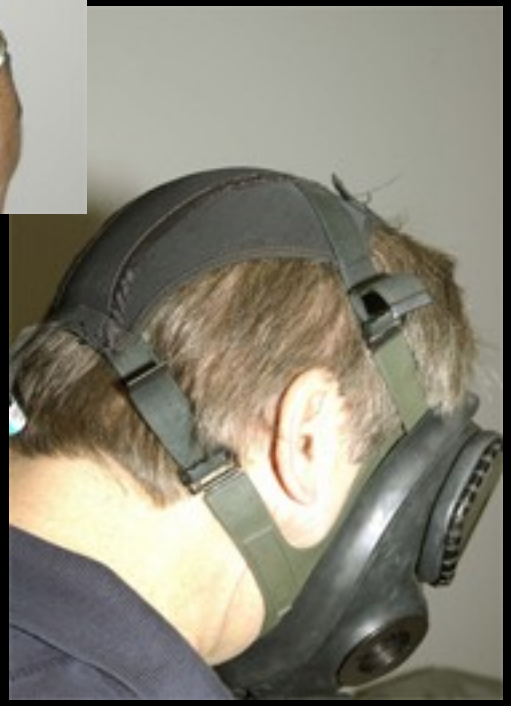
- If air is contaminated with CB agents, do not uncover outlet valve cover of facepiece. Positive pressure must be maintained when the facepiece and hoods are being worn.

- Stop breathing and close your eyes. Toxic agents may be in the surrounding air. Perform the steps for putting on your mask quickly.You must put the facepiece on before you take another breath.

- Put your chin in the chin pocket.

- **Grasp tab and pull head harness over your head. Be sure your ears are between the temple straps and cheek straps.**

NOTE: *Temple and forehead straps have already been adjusted during fitting.*



- While holding facepiece to face with one hand, maintain seal. Using other hand tighten cheek straps one at a time.
- Be sure headpad is centered at the back of your head.
- Straps should lie flat against your head.

- Cover opening at bottom of outlet valve with two fingers of one hand. Breathe out hard so that air escapes around edge of facepiece.

- With palm of hand, cover inlet port of canister and breathe in. Facepiece should collapse against your face, and remain so while you hold your breath. If it does, facepiece is airtight. If facepiece does not collapse, check for hair, clothing, or other matter between facepiece and your face.
- Resume breathing

Checking Your Mask Assembly for Proper Function

Note: *Leaks around the edge of your mask assembly are usually caused by bad fit.*

- Check for leaks at edge of mask assembly by feeling for incoming air on your face
- Check for bulge by running finger around edge of your mask assembly

Checking Your Mask Assembly for Proper Function

To get rid of leaks, make minor adjustments to the straps:

- To stop leaks at forehead, adjust forehead straps
- To stop leaks at temple, adjust temple straps
- To stop leaks at cheek, adjust cheek straps and be sure headpad is centered at the back of your head.
- To stop leaks at the throat or under the chin, lift mask assembly higher on face, seating chin firmly. *Adjusting forehead straps and cheek*

- Clear your facepiece again and recheck your facepiece for leaks.
- Resume breathing.

STOWING YOUR MASK and ADDITIONALLY AUTHORIZED ITEMS

NOTE:

Ensure head harness is over front of facepiece.

WARNING

Any solid matter (even hair) under valve disks will cause fogged eyelenses, discomfort, and leakage.

CAUTION

Abrasives such as sand and grit will scratch eyelenses. Be sure the outserts are installed on the facepiece.

- Check that outserts are installed on facepiece.
- Check that your facepiece is dry and free of oil and solvents before stowing.
- Check that interior of carrier is free of dirt and trash or other unauthorized items.

- Hold front of facepiece in a horizontal position.
- Pull head harness over front of facepiece.
- Hold the facepiece upright and put it in the carrier with the lenses facing away from your body.

NOTE: US on the outside of the carrier facing up. Eyepieces facing outward toward US. Place the canister in the

- Stow your other outserts, waterproof bag and operator's manual in the inside pockets of the carrier.

- Store your facepiece in closed carrier in a cool, dry, dark place.

It is preferable to hang carrier by hook on short strap.

CAUTION:
To avoid damage to facepiece, put only authorized items in your carrier.

TWO WAYS TO WEAR YOUR MASK CARRIER

The shoulder carry method is as follows:

- Attach shoulder strap D-ring to hook on carrier and adjust.
- Hook waist strap to round ring and adjust

The leg carry method is as follows:

- Put shoulder strap D-ring around waist and attach to hook carrier. Adjust.
- Bring waist strap from back and around inside of leg.
- Pass waist strap through round ring, and hook to D-ring. Adjust.

OPERATION OF ADDITIONALLY AUTHORIZED ITEMS

Optical Inserts

WARNING

- Do not wear contact lenses with your facepiece, unless it is to be used for emergency escape.

INSTALLING OPTICAL INSERTS:

- Insert lower portion of wire frame into bottom of lens cavities.
- Insert and guide upper portion of wire frame into top of lens carrier, ensuring that wire frames are seated beneath the four retainers in each lens opening.

To receive credit…

- Please send an email to maskissue@apgea.army.mil